

**ABSTRACT OF THE DISCLOSURE**

Several embodiments of a space diversity trellis interleaver system are provided for communicating data over a plurality of separate communication paths in order to inhibit distortion caused by impulse noise or other correlated noise and enhance the data transmission rate of data communications. The transmitter is designed to receive a plurality of data streams from data terminal equipment (DTE), which can be one or more devices. One or more convolutional encoders, preferably trellis encoders, encode each of the data streams. In an alternative embodiment, more than one trellis encoder is used to trellis encode each data stream. Data segments from the convolutionally encoded data streams are interleaved with a switch. The plurality of interleaved convolutionally-encoded data streams are modulated and transmitted onto a respective plurality of separate communication paths. At the receiver, the plurality of data streams is received from the separate communication paths and demodulated. The data segments are de-interleaved with a switch, and then the de-interleaved data streams are convolutionally decoded with convolutional decoders, preferably trellis decoders. The de-interleaved convolutionally decoded data streams are communicated to one or more DTEs.

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